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CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 18 October 2002 with an application for Letters Patent number 522068 made by ROBERT CUMMINS.

Dated 15 September 2003.

PRIORITY DOCUMENT

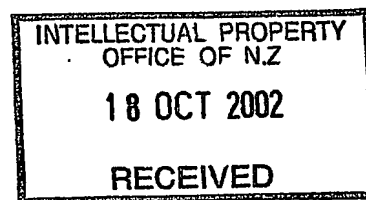
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Neville Harris

Neville Harris
Commissioner of Patents, Trade Marks and
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NEW ZEALAND
PATENTS ACT, 1953



PROVISIONAL SPECIFICATION
MULTI CAPACITY AMUSEMENT RIDE

I, ROBERT CUMMINS, a citizen of New Zealand, of 195-201 Willis Street, Wellington, New Zealand, do hereby declare this invention to be described in the following statement:

FIELD OF INVENTION

The invention relates to amusement rides and in particular to a ride arranged so that two or more riders may be attached by harnesses or carriers to different parts of a rail which the riders descend by gravitational force, the rail being arranged so as to be capable of supporting one or more riders moving simultaneously through the same linear point of the rail thereby increasing the ride capacity of the rail.

BACKGROUND

Rides have been devised to move a rider from one point to another with the ride following the line of a cable. In these rides the rider either holds onto or sits on a cross beam suspended from the cable or rides in a cart suspended from a cable, or similar. These "flying fox" rides begin at a higher point above the ground and end point away from the start point and nearer the ground than the start point. A disadvantage with a flying fox ride is that once the ride is finished the crossbeam or cart must be retrieved from the end point. Another disadvantage is that a flying fox typically runs along a straight path and cannot be formed into a circular route. Another disadvantage is that a flying fox typically cannot support riders above and below the cable at the same point and consequently the number of rides possible in a given period, and the potential economic benefit to the ride operator, is reduced.

Another form of ride is the roller coaster where riders are strapped or otherwise held in seats in carriages that move along a track. The roller coaster is permanently attached to the track. In these rides the start and end points are in the same place and some form of power is typically required to move the carriage into position to begin the ride. A disadvantage with this sort of ride is that a roller coaster track typically cannot support riders separately attached to different sides or parts the track at the same linear point and at the same time. Consequently the number of rides possible in a given period, and the potential economic benefit to the ride operator, is reduced.

SUMMARY OF INVENTION

It is the object of the current invention to overcome or alleviate some of the disadvantages described above or to at least provide the public, and those in the business of operating such amusement rides, with a useful choice.

In broad terms in one aspect the invention comprises an amusement ride including a rail supported over a curved path and extending between a high end and a low end and at least one first harness or carrier arranged to hold at least one rider beneath the rail and at least one second harness or carrier arranged to hold at least one rider above the rail, the harnesses or carriers including attachment means arranged to slidably engage with the rail to enable the harnesses or carriers to descend carrying the riders from the high end to the low end and at the same time.

The riders may be one above another on the rail or may be in different places along the rail.

Preferably the rail is arranged around the outside of at least one structure. Alternatively the rail may be arranged inside the at least one structure.

In this aspect the rail extends between a high end and a low end and generally slopes down from the high end to the low end. However the rail may include curves, twists and loops and other sections where the slope is not uniform from the high end to the low end. The slope of the rail may vary along the length of the rail.

The structure around which the rail is arranged may be a solid structure or may be supports forming a skeleton or shell of a structure. The structure may also be a natural feature such as a canyon or valley.

In this aspect preferably the amusement ride includes means for riders to ascend from the bottom of the structure to a platform on the structure at or near the high end of the

rail. Preferably the low end of the rail is close to the means to ascend to the platform. Alternatively the high and low ends of the rail may be in different places.

In broad terms in another aspect the invention comprises an amusement ride including a rail arranged around at least one structure so as to form a closed loop or circuit and at least one first harness or carrier arranged to hold at least one rider beneath the rail and at least one second harness or carrier arranged to hold at least one rider above the rail including attachment means arranged to slidably engage with the rail to enable the harnesses or carriers to carry the riders around the ride circuit and at the same time.

The riders may be one above another on the rail or may be in different places along the rail.

The structure around which the rail is arranged may be a solid structure or may be supports forming a skeleton or shell of a structure or even poles. The structure may also be a natural feature such as a valley or canyon.

Preferably the amusement ride in the second aspect includes mechanical means for the rider(s) to ascend the rail to a high point of the rail from where the riders descend through gravitational forces. The movement of riders along the rail may be controlled by a known computerised ride management and/or braking system.

In this specification rail describes any suitable means onto which a harness or carrier may be slidably engaged. For example a rail may be a beam or a plurality of beams joined together to form one rigid member. Although described as rigid, it is known that there will be some flexing due to the weight of the member itself and the weight of the riders moving along the member.

Where the rail consists of a plurality of beams joined together to form a rigid member then such beams may be identical so that by way of example the ride on top of the rail is in effect a reflection of the ride under the rail. Alternatively the beams may be different.

BRIEF DESCRIPTION OF DRAWINGS

The invention will be further described by way of example only and without intending to be limiting with reference to the following drawings, wherein:

- 5 Figure 1 shows a first embodiment of amusement ride of the invention,
 Figure 2 shows a second embodiment of amusement ride of the invention, and
 Figure 3 shows two riders on a rail of the invention.

DETAILED DESCRIPTION OF PREFERRED FORMS

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Figure 1 shows one form of amusement ride of the invention. The amusement ride starts from platform 1 which is near the high end of rail 2. Rail 2 curves around hexagonal structure 3 from platform 1 to at or near the ground at point 4. The rail is supported by support means 5 cantilevered from hexagonal structure 3.

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The rail 2 extends between high end 9 and low end 4. The rail is non-continuous in that the high end of the rail is not directly joined to the low end. The rail is shown as having a smooth descent curve in Figure 1 but the rail may include twists, spirals, loops, sections of steeper descent and other deviations from a uniform descent, slope and/or
20 curve. At the low end of the rail, the rail may be substantially horizontal or may curve up slightly to slow a rider(s) to a stop. Alternatively other means of stopping a rider(s) may be used.

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The rail may be arranged to impart side to side motion to the rider(s). This may be by means of the supports or by twists in the rail. Alternatively the rail may be arranged not to impart side to side motion to the riders.

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Where it is desired to arrange the rail so as to impart side to side motion to the riders, for example to alter the quality of the ride, then the rail may alternatively be supported by cables or other non-rigid means so that the rail is not fixed in space.

The hexagonal structure of Figure 1 also optionally includes means for a rider(s) to ascend from the bottom of the ride at point 4 to platform 1 up pillar 6. This may be by means of a set of steps, an elevator, or some other device. The high and low ends of the rail may be arranged in a substantially straight line vertically, or close together, so that a rider does not have far to walk to ascend to the platform and begin another ride and the attachment means do not have to be retrieved from a distant point. Alternatively the high and low ends of the rail may be in different locations.

Although the hexagonal structure is shown as a skeleton or shell the structure around which the rail extends may be solid, for example a building. A solid structure will suffice so long as clearance is allowed between the rail and structure so that a rider does not risk swinging into the structure. The structure supporting the rail is not limited to a hexagonal shape and may be any suitable shape or type including towers or poles. The structure may also include a natural feature such as a valley or canyon in which the ride is arranged.

In one embodiment the support means 5 attaching the rail to the hexagonal structure are preferably formed from rigid material. Support wires or cables may also be used to add stability to the rail. In another embodiment support the rail may be supported by support cables. The support means 5 are shown on the outside of the hexagonal structure but may alternatively be arranged with the rail inside the hexagonal structure to provide a ride with steeper curvature than the ride shown in Figure 1. In another embodiment the rail may be arranged partially inside and partially outside the structure.

The amusement ride apparatus of the invention also includes harnesses or carriers into which or onto which a rider(s) is strapped. The harnesses or carriers include attachment means (not shown) arranged to slidably engage with the rail around the hexagonal structure both on top of the rail and underneath the rail. The attachment means are arranged to slide around the rail from high end 9 to low end 4 when engaged with the rail. The attachment means are engaged to the rail at the high point of the ride and disengaged from the rail at the low point of the ride. The attachment means or the rail

itself may also include a braking system arranged to slow the harnesses or carriers and riders at the low end of the ride or during the course of the ride to control speed.

5 The harnesses or carriers may be arranged to fit a single rider or to fit a plurality of riders. For example, a group of riders may be harnessed together for a ride. The harnesses or carriers may include a solid seat portion arranged so that a rider can sit on the solid portion. Alternatively the harnesses or carriers may be arranged so that the rider is lying flat during at least part of the ride. In this embodiment preferably the harnesses or carriers and attachment means are sufficiently lightweight so that at the end
10 of the ride they can be transported to the high end of the rail. Transport may be by lift or stairs. Alternatively if the low end of the rail is spaced away from the high end transport may include vehicular transport. The harnesses or carriers and attachment means should be sufficiently lightweight to enable an operator to engage the attachment means with the rail without mechanical assistance.

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In use a rider(s) is strapped into the harness or carrier either while on the platform or on the ground before ascending to the platform. When the harnessed rider(s) is on the platform an operator engages the attachment means of the harness to the rail either below or above the rail as required. The operator is then able to begin the ride by
20 moving the harness or carrier to the start point. Preferably the rail includes a section of steep descent to give the rider(s) the initial impression of free falling or flight.

At the conclusion of the ride the rider(s) may detach the harness attachment means from the rail or an operator may do this. The rider(s) may then ascend to the platform again
25 or may take the harness or attachment means off so that another rider(s) may use the ride.

A rider above the rail may be directly above a rider in a harness or carrier below the rail. Alternatively the rider above the rail may not be directly above a rider in a harness or
30 carrier below the rail. The two rides are separate and can be operated independently of each other.

Figure 2 shows a second embodiment of the invention. In this embodiment the rail is continuous in that it forms a closed loop or circuit and the harnesses and attachment means remain engaged with the rail. A mechanical elevator 10 is used to take the harnessed riders and attachment means to the high point 9 of the rail 2 from where they descend by gravitational force to low point 4.

The rail is shown as having a smooth descent curve in Figure 2 but may include twists, spirals, loops, sections of steeper descent and other variations from a uniform descent and/or curve. The rail may also be arranged to impart side to side movement to the rider(s).

Again where it is desired to arrange the rail so as to impart side to side motion to the riders then the rail may alternatively be suspended by cables or other non-rigid means so that the rail is not fixed in space.

Again the structure may include a natural feature and is not limited to a hexagonal shape. The rail may be inside, outside or partially inside and outside the structure.

Unlike the embodiment described with reference to Figure 1, in use a rider(s) is strapped into the harness or onto the carrier and attached to the rail at a lower point before ascending to the high point of the rail via the mechanical elevator 10. At the conclusion of the ride the riders are detached from the harness or carrier and attachment means that remain engaged with the rail.

Figure 3 is a view of two riders on one embodiment of amusement ride of the invention. Upper rider 7 is in an upper harness and lower rider 8 is in the lower harness. In this embodiment both harnesses are slidingly engaged with rail 2 by means of rollers 13 that are arranged around rail projections 11 and 12. Similar rail projections are provided on the other side of the rail. The harnesses may also include braking means (not shown) and in the case of a complete loop rail (such as that shown in Figure 2) means to engage with the lift mechanism to return the harnesses to the top of the rail. As can be seen from this Figure the slope and curve of the rail is not uniform. If the rail is symmetrical

the upper and lower harnesses may be identical and interchangeable (in an open loop ride).

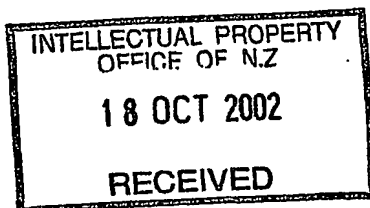
5 In Figure 3 rider 7 is shown lying flat on his/her stomach and facing forwards. The harness or carrier could also be arranged so that the rider lies on his/her back and faces forward like a luge ride or any other suitable position.


10 Rider 8 is shown lying flat on his/her stomach and facing forward. This is a preferred position for riders under the rail although other positions may be used. One alternative position is to suspend the rider below the rail to allow more freedom of movement to the rider.

15 In this Figure the rail is depicted so that the top half of the rail is in effect a reflection of the bottom half of the rail and the carriages shown may be utilised by either rider. Other forms of rail are possible under the invention and different forms of carriage may be used for riders carried on different parts of the rail.

20 The foregoing descriptions indicate only two riders slidingly engaged to the rail and capable of moving through the same linear point of the rail at the same time. These are indicated as riders engaged to the top and the bottom of the rail. It is possible under the invention to extend the number of riders so engaged to three or more by adapting the cross section shape of the rail to provide for more engagement surfaces to allow a third or more riders to become engaged to the rail.

25 The foregoing describes the invention including preferred forms thereof. Alterations and modifications as will be obvious to those skilled in the art are intended to be incorporated within the scope hereof.



Robert Cummins
By the authorised agents
A. J. PARK
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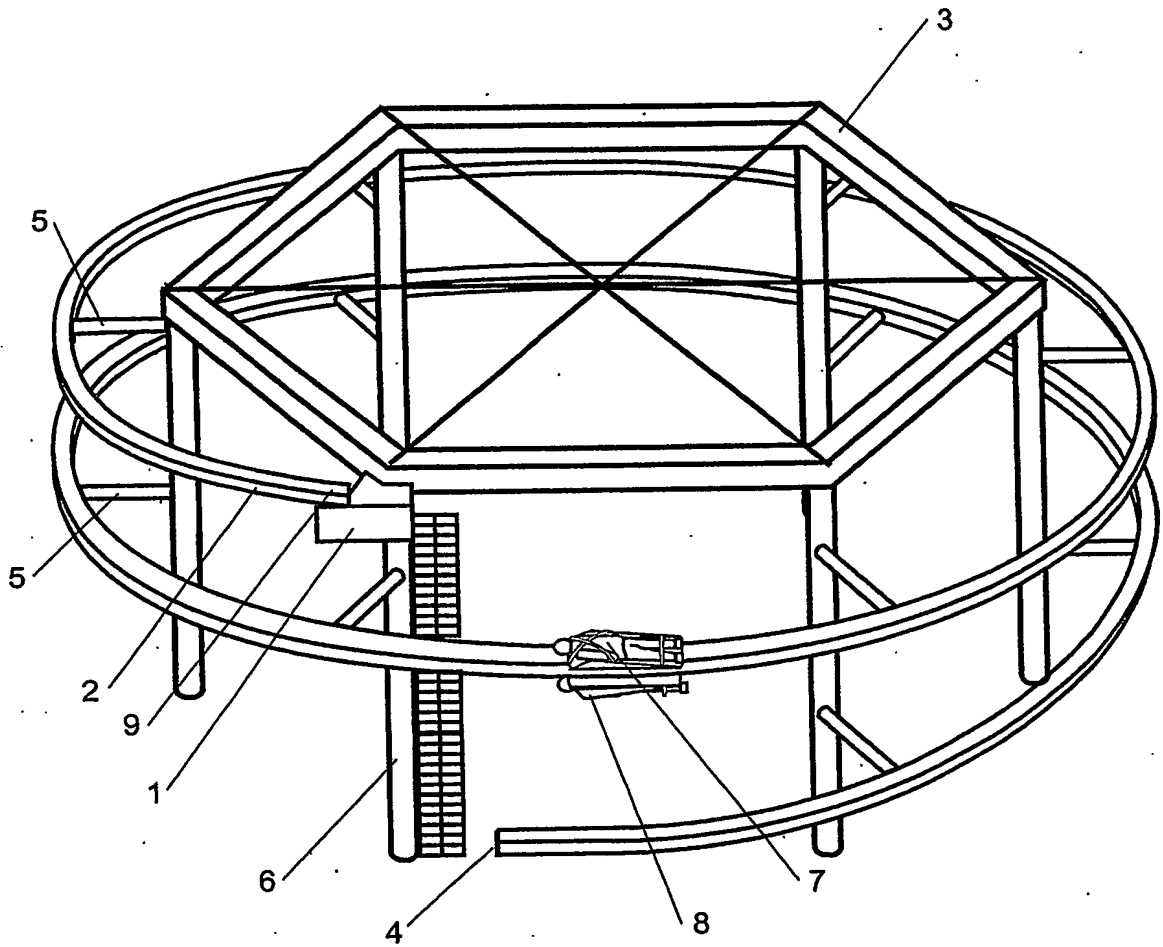


FIGURE 1

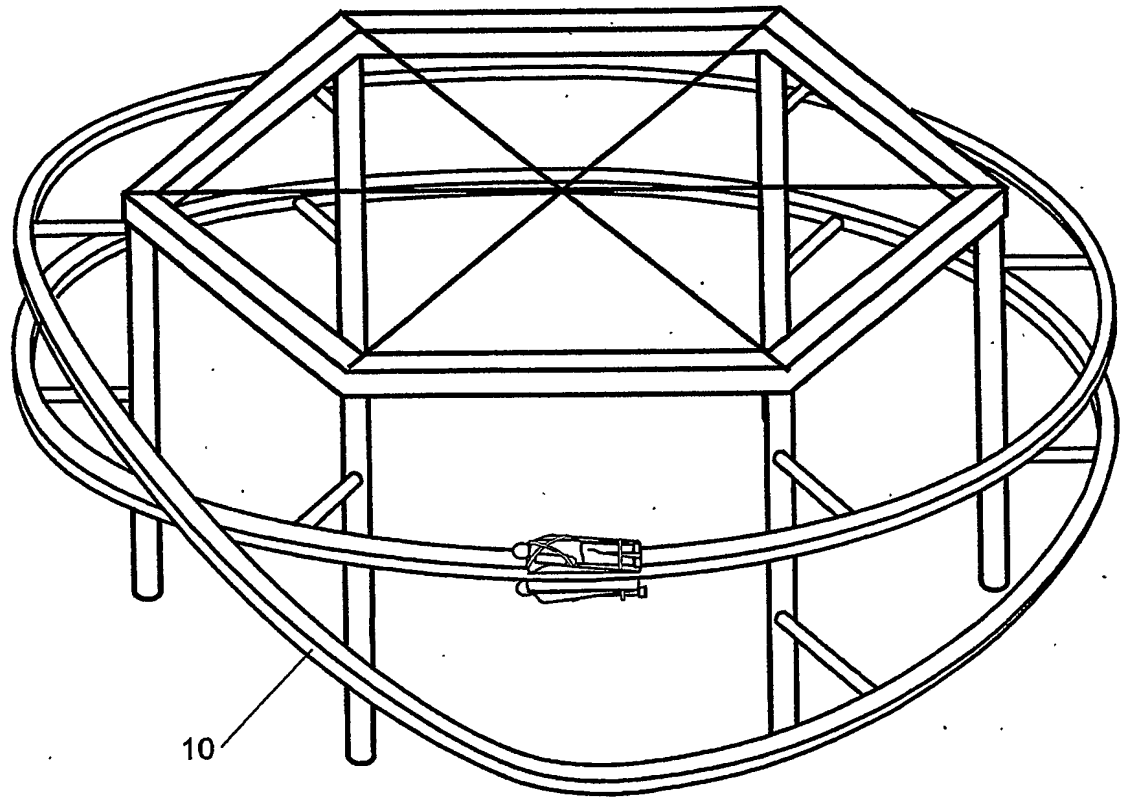
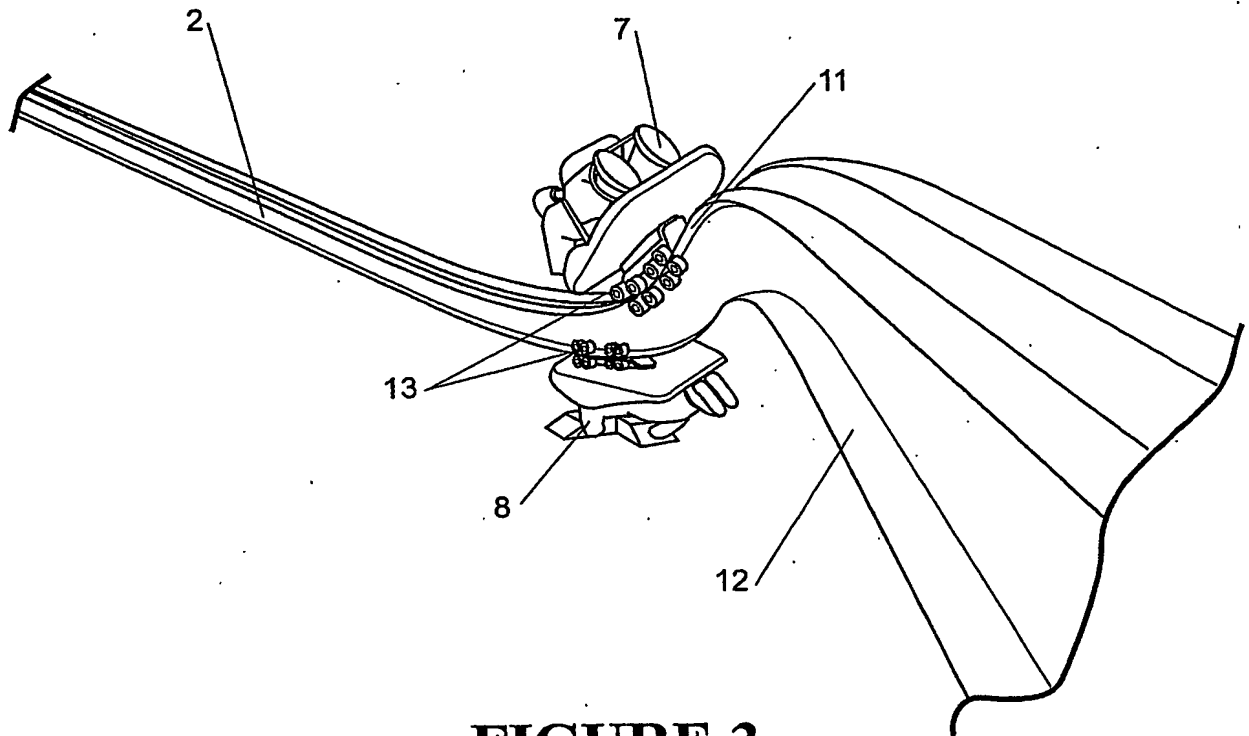


FIGURE 2

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**FIGURE 3**